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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Sandeep Gulati

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EXAMINER

SKIBINSKY, ANNA

ART UNIT

PAPER NUMBER

1631

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/616,869	GULATI, SANDEEP	
	<b>Examiner</b>	<b>Art Unit</b>	
	Anna Skibinsky	1631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15 and 19-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/20/05; 1/19/06</u>  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claims*

Claims 1-3 and 5-64 are objected to because of the following informalities: Claim number 3 is followed by claim number 5 in the original claims set filed 7/09/2003. Claim number 4 is absent from the instant claim set. Appropriate correction is required.

As set forth in the restriction requirement, original claims numbered as 5-64 have been referred to as claims 4-64. The below office action also refers to the newly renumbered claims, instant claim set being renumbered as claims 1-63.

### *Claim Election/Restriction*

1. Applicant's election without traverse of Group I in the reply filed on 1/5/07 is acknowledged.
2. Claims 14, 15, and 19-63 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/5/07.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

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is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3, 5, 7, 11, 12, and 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 6-11 of US Patent No. 7,047,136. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims are either species of the instant claims or have only minor differences encompassed by the instant generic claims.

Claims 1, 2, 7, 11-13, and 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, 12, 13, 17, 18, 19-22 of US Patent No. 6, 671,625. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims are either species of the instant claims or have only minor differences encompassed by the instant generic claims.

Claims 1, 2, 7, 8, 11 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-13, 16, 17, and 19-20 of US Patent No. 6, 963,806. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims are either species of the instant claims or have only minor differences encompassed by the instant generic claims.

***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-13 and 16-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-13 and 16-18 are drawn to a process and the related computer system for performing interferometric analysis to detect the presence of an event. The process involves the application of algorithms and computations that results in signal pattern detection and analysis and, therefore, involves the application of a judicial exception. Regarding inventions involving the application of a judicial exception, said application must be a practical application of the judicial exception that includes either a step of a physical transformation, or produces a useful, concrete, and tangible result (*State Street Bank & Trust Co. v. Signature Financial Group Inc.*

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CAFC 47 USPQ2d 1596 (1998), AT&T Corp. v. Excel Communications Inc. (CAFC 50 USPQ2d 1447 (1999)). In the instant claims, there is no step of physical transformation, thus the Examiner must determine if the instant claims include a useful, concrete, and tangible result.

In determining if the claimed subject matter produces a useful, concrete, and tangible result, the Examiner must determine each standard individually. For a claim to be “useful,” the claim must produce a result that is specific, and substantial. For a claim to be “concrete,” the process must have a result that is reproducible. For a claim to be “tangible,” the process must produce a real world result . Furthermore, the claim must be limited only to statutory embodiments.

Claims 1-13 and 16-18 do not produce a tangible result. A tangible result requires that the claim must set forth a practical application to produce a real-world result. This rejection could be overcome by amendment of the claims to recite that a result of the method is outputted to a display, a user, a readily accessible memory or other computer on a network, or by including a physical transformation.

Claim 2 is drawn to a software, per se, and as such reads on the judicial exception of an abstract idea. A computer programs or software not disposed on physical media is non-statutory.

Claims 1-13 and 16-18 are toward a system that embodies both a process and an apparatus which are two different statutory classes of invention. MPEP 2173.05(p):

## II. PRODUCT AND PROCESS IN THE SAME CLAIM

A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. In Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic transmission workstand and

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the method steps of using it was held to be ambiguous and properly rejected under 35 U.S.C. 112, second paragraph.

Such claims should also be rejected under 35 U.S.C. 101 based on the theory that the claim is directed to neither a “process” nor a “machine,” but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Id.* at 1551.

***Claim Rejections - 35 USC § 112-2<sup>nd</sup> paragraph***

The rejection of claim(s) 1-9 and 16-20 for being Vague and Indefinite under 35 USC § 112-2<sup>nd</sup> paragraph in the Office Action filed 4/11/2006 is withdrawn in view of Applicant's Remarks/Amendments filed 7/10/2006

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-13 and 16-18 recite both an apparatus and a process which is vague and indefinite as to what is being claimed. Claim 1, line 1 (system “for performing”) are to apparatus components of the system while claim 1, lines 2-4 are to a process step (“using an expressor function”). For the purpose of examination, the claimed system will be interpreted as an apparatus and functional limitations will not be given patentable weight.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Cabib et al. (US Patent No.5,539,517).
2. Cabib et al. teach an interferometer with a detector array that is two dimensional (Abstract, col. 4, lines 25-67. The intensity of the optical path difference (ODP) which induces the interference is computed (i.e. computationally induced) via set of equations (col. 10, lines 16-60), as in claims 1 and 5 (i.e. spacial 2-D array).
3. Cabib et al. teach both moving and non-moving interferometers are taught (col. 2, lines 7-32), as in claim 3 reciting either static or dynamic data.
4. Cabib et al. teach collecting optics (Figure 1 and col. 4, lines 49-54) from a platform shown in Figure 1 and optical plate made of light transmitting material (Figure 11, col. 4, lines 1-7), as in claim 6
5. Cabib et al. teach a modulating, periodic function, and a Jacquionot advantage, and that the device taught is capable of improving the signal-to-noise ratio by a factor and the square root of the ratio of the signal at a particular wavelength to the average signal in the spectral range (col. 2, line 65 to col. 3, line 13), which reads on the limitation of claims 8 and 9 reciting an



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expressor function which rejects any interfering noise and extracting spectral invariations (i.e. noise) of events of interests.

6. Cabib et al. teach that the radiation considered is through an optical phase difference (OPD), expressed in equation 1 (col. 6, lines 9-22) which recites the inverse of the wavelength of the radiation (i.e. frequency) where wavelength and wave numbers (col. 10, line 18) are a property of light, which reads on the limitation of claims 4 and 10 reciting an expressor function that is a quantum expressor function (claim 4) and comprising frequency domain sequences (claim 10).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabib et al. as applied to claims 1, 3-6 and 8-10 above, and further in view of Garini et al.

**10.** Cabib et al. teach an interferometer capable of performing moving and non-moving interferometric analysis on optical platforms and 2-D arrays using functions that expresses (i.e. an expressor function) signal to noise ratios, properties of radiation such as frequency and wavelength (i.e. quantum expressor function), as required by claims 1, 3-6 and 8-10 stated in the rejection above.

**11.** Cabib also et al. teach an apparatus capable of analyzing light from a variety of sources (col. 5, lines 1-10) but do not specifically teach the apparatus applied to biological samples such as hybridized spotted cDNA microarrays of claim 7. However, Garini et al. teach interferometric analysis of in situ hybridizations (Abstract) of DNA (col. 12, lines 22-29 and Figure 12 (e)).

**12.** Cabib et al. further teach an apparatus capable of detecting resonant events (i.e. via Raman spectral imaging, col. 5, lines 1-10 and col. 12, lines 29-35), as in claim 18. However, Cabib et al. do not teach implementing the interferometric analysis in software as set forth in claims 2, 11-13 and 16-18.

**13.** However, Garini et al. teach interferometric analysis using software (col. 2, lines 23-32), as in claims 4 and 11.

**14.** Furthermore, Garini et al. teach detection and analyzing in situ hybridization using interferometric analysis including using a mathematical algorithm (col. 6, line 55 to col. 7, line 43), as in the detection and “quantitation analysis” of claim 12.

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15. Garini et al. teach passing incident light through an interferometer and splitting the light beam into two coherent beams which combine to interfere (col. 7, lines 15-22; and Figure 3), which discloses a system capable of constructive interference as recited in claim 13.

16. Garini et al. teach algorithms that manipulate and compute the properties of wavelengths of the spectra, which read on the “software emulation of wave-wave interactions” in claim 16.

17. Garini et al. teach wavelength spectra in e.g., Figures 7(a) to (e), wherein the frequency domain is inverse the wavelength and thus reads on an apparatus capable of interferometric analysis which includes a frequency domain as recited in claim 17.

18. Garini et al. teach algorithms calculated by the apparatus which performs spectral image analysis (col. 19, line 7 to col. 20, line 55) on fluorescing cells wherein the apparatus is capable of measuring a complete spectrum and providing quantitative insight into the behavior of dye molecules as well as apply data analysis and classification algorithms such as multivariate analysis, principal component regression to spectrally related parameters can be analyzed (col. 22, lines 20-44), which reads on an apparatus capable of performing iterative convergence to detect resonance events, as recited in claim 19.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have used the interferometer as taught by Cabib et al. with the analysis software as taught by Garini et al. because Garini et al. teach that their invention is compatible with the interferometer of Cabib et al. (col. 11, lines 30-33; and col. 14, lines 27-51). One of skill in the art would have been motivated to the software analysis of Garini et al. in combination with the interferometer of Cabib et al. because Garini et al teach that the imaging spectrometer of Cabib is “highly suitable” to implement the method of the invention of Garini (col. 14, lines 1-7).

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One would be further motivated to combine the teachings of Garini et al. with that of Cabib et al. because Garini et al. teach that software and mathematical algorithms are necessary to analyze and display important results in a meaningful way (col. 2, lines 23-32).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Skibinsky whose telephone number is (571) 272-4373. The examiner can normally be reached on 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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